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|---|-------------|----------------------------------|------------------------|------------------|
| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR             | ATTORNEY DOCKET NO.    | CONFIRMATION NO. |
| 10/014,506  | 12/14/2001  | Masayuki Murakami                | Q66577                 | 3596             |
| 7590<br>SUGHRUE, MION, ZINN,<br>MACPEAK & SEAS, PLLC<br>2100 Pennsylvania Avenue, N.W.<br>Washington, DC 20037-3202 |             | EXAMINER<br>LAVIN, CHRISTOPHER L |                        |                  |
|   |             | ART UNIT                         | PAPER NUMBER<br>2624   |                  |
|   |             | MAIL DATE<br>07/11/2007          | DELIVERY MODE<br>PAPER |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

|                              |                      |                    |
|------------------------------|----------------------|--------------------|
| <b>Office Action Summary</b> | Application No.      | Applicant(s)       |
|                              | 10/014,506           | MURAKAMI, MASAYUKI |
|                              | Examiner             | Art Unit           |
|                              | Christophér L. Lavin | 2624               |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 10 April 2007.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-22 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-22 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 14 December 2001 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.  
 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_.  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

This action is in response to the amendment filed on 04/10/07.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Before providing the rejections the examiner would like to state that these are essentially the same rejections used since the first office action on this case. That is because, although Takeo in view of Hiyama discloses an indirect link (first going to a pointer and then to the other images) between the three images, the combination still discloses a link between the images.

Data structures for images are well known and have been in use for years. The examiner would like to point the applicant to US Pat. 5,278,954, Hohlfield et al., that discloses a direct link between image data sets (referred to as data structures in the patent). No matter how detailed the applicant's descriptions get of the links between images in the claims of this application; these features will never result in allowability. Hohlfield is being provided to further prove this statement.

The allowable material in this case has to lie in the operations that are used to perform the subtractions between the high and low energy images that differentiate from standard image subtraction techniques because of the unique properties of the particular images. The examiner would be happy to assist the applicant's representative in determining what this material is..

5. Claims 1 – 16, 19 and 20 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeo (6,075,877) in view of Hiyama (6,269,379).

In regards to claim 1, Takeo discloses in lines 39 – 67 of column 12 an image data handling method for generating energy subtraction images from high-energy and low-energy images. The method disclosed by Takeo must have some way of identifying the image files in order to work. The information that would be required in some fashion

about these images is identifying an image as high or low energy, a relationship between pairs (indicating that the low-energy data set belongs to the same combination as the high-energy image data set), and a relationship between a pair and the resultant image. These relationships constitute combination information. The information listed above is necessary for the method disclosed by Takeo to work; Takeo, however, does not disclose how this information is stored or how the links are established.

Hiyama teaches of storing attribute information and links to files (through use of pointers) in the paragraph starting at column 6, line 66. Figure 2 shows an example of some of the information stored with an image. This stored information is for medical images. Figure 2, item 71 discloses linking information and Figure 2, items 72, 76, and 77 among others teaches identification information. Modifying the identification information to include the relevant information for Takeo would have been obvious.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use linking and data attributes as disclosed by Hiyama to implement the needed file management system for the method disclosed by Takeo. By linking the files together and storing attribute information about the files the method disclosed by Takeo will be able to handle multiple groupings of files and store the results, along with the associated data.

In regards to claim 2, the method, disclosed by Takeo in view of Hiyama, requires a link between the energy subtraction image and the two input images in order to store the results, this link goes both ways. Hiyama discloses the means to manage this information.

In regards to claim 3, claim 3 is rejected for the same reasons as claim 1. The argument analogous to that presented above for claim 1 is applicable to claim 3.

In regards to claim 4, claim 4 is the apparatus claim of claim 1. Please see the rejection of claim 1 for the reasons for rejection of claim 4. It is further noted that Takeo discloses an energy subtraction apparatus in figure 5.

In regards to claim 5, Takeo discloses that "the first X-ray image signal  $SO_1$ , which represents the first X-ray image having been recorded with the X-rays having a comparatively low energy level". Takeo must have some way of identifying the low-energy image from the high-energy image. As disclosed in the rejection of claim 4, Hiyama teaches in column 2, line 32 an approach to storing the attribute information needed to identify the low and high-energy images from each other.

In regards to claims 6/4 and 6/5, as discussed above in the rejection of claim 4 the apparatus disclosed by Takeo in view of Hiyama requires a link between the energy subtraction image and the two input images in order to store the results, this link goes both ways. Hiyama discloses the means to manage this information.

In regards to claim 7, as discussed above in the rejection of claim 4 the apparatus disclosed by Takeo in view of Hiyama requires a link between the energy subtraction image and the two input images in order to store the results, this link goes both ways. Hiyama discloses the means to manage this information.

In regards to claim 8, as shown in the rejection of claim 4 Takeo discloses an information addition means. Hiyama teaches of storing information in a hierarchy in the

paragraph starting at column 12, line 30. Hiyama discloses the patient as the highest level, then the examination, and finally exam images.

In regards to claims 9/8 and 9/7, Takeo discloses in lines 44 – 46, column 10 that a CRT is used to display an “image signal”. This image signal is either the high or low energy image. Then in the paragraph starting at column 11, line 56 Takeo discloses that the results (energy subtraction image) are displayed on the CRT. As shown previously Takeo in view of Hiyama discloses a means to store the images in a file system. Takeo however does not disclose a switching means.

Hiyama teaches in first two paragraphs in column 11, starting at line 1 and illustrated in figure 9 a switching means which shows multiple images to select. “This selection is achieved by moving the mouse to the item of each intended image file.”

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to include the switching means disclosed by Hiyama to the apparatus disclosed by Takeo in view of Hiyama. Allowing a doctor to switch between images can help with diagnosis.

In regards to claims 10/9/8 and 10/9/7, Takeo discloses in Figure 5, item 44 and further described in lines 63 – 67, column 12 an energy subtraction processing means. Takeo discloses a subtraction parameter changing means in Figure 5, item 43' with further explanation in the paragraph starting at column 8, line 54. “An input means 41 for inputting information representing a body thickness  $t$  of an object, and a storage means 42 for storing information representing predetermined parameters.”

In regards to claims 11/9/8 and 11/9/7, Takeo discloses in Figure 5, item 36 and further described in the paragraph starting at column 12, line 7 an image processing means. Takeo discloses an image processing parameter changing means in Figure 5, item 43' with further explanation in the paragraph starting at column 8, line 54. "An input means 41 for inputting information representing a body thickness  $t$  of an object, and a storage means 42 for storing information representing predetermined parameters."

In regards to claim 12, claim 12 is the apparatus claim of claim 3. Please see the rejection of claim 3 for the reasons for rejection of claim 12. It is further noted that Takeo discloses an energy subtraction apparatus in figure 5.

In regards to claim 13, The image data handling method of claim 1, wherein the combination information identifies, in the low-energy image data set and the high-energy data set, image data sets used to generate the energy subtraction data set (Hiyama: Figure 2; col. 6, line 66 – col. 7, line 16: As previously stated a link between the low, high and subtraction data set is established. Based on Figure 2 this link would involve having the same examination ID (each group comprising of high low and subtraction data sets), item 71. Each data set would also have attribute information, which would identify the images as high, low, or subtraction. Hiyama discloses attribute information, the particular attribute information though would be modified to suit the needs of Takeo. This combination data would identify the image data sets used to generate the energy subtraction image. As the combination data in each high and low energy data set will identify which group it belongs to, then by looking into the group the image data sets used for generating the subtraction image can be identified using the

region and position codes. As it is already known that a high and a low energy data set are required to perform the subtraction. So by identifying the group the combination data is identifying the image data sets used to create the subtraction image.).

In regards to claim 14, The image data handling method of claim 2, wherein the combination information identifies, in the energy subtraction image data set, image data sets used to generate the energy subtraction image data set (The same logic applied to claim 13 applies to this claim as well.).

In regards to claim 15, The image data handling method of claim 1, wherein the combination information identifies, in the low-energy image data set and the high-energy data set, image data sets used to generate the energy subtraction data set (The same logic applied to claim 13 applies to this claim as well.).

In regards to claim 16, The image data handling method of claim 2, wherein the combination information identifies, in the energy subtraction image data set, image data sets used to generate the energy subtraction image data set (The same logic applied to claim 13 applies to this claim as well.).

In regards to claims 19 and 20, the applicant should be made aware that simply claiming an automatic version of a manual task does not make something patentable as shown in *re VENNER AND BOWSER*, 120 USPQ 192 (CCPA 1958) where it was shown that automating a manual task was not patentable.

Hiyama teaches (col. 5, lines 44 – 47) that a user enters at least some of the combination information in manually.

In regards to claims 21 and 22, claims 21 and 22 are rejected for the same reasons as claim 2. The argument analogous to that presented above for claim 2 is applicable to claims 21 and 22.

6. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeo in view of Hiyama as applied to claims 1 and 4 respectively above, and further in view of Cabrera (6,029,160).

In regards to claims 17 and 18, wherein the combination information comprises a first record for the low-energy image data set, a second record for the high-energy image data set and a third record for the energy subtraction image data set (Each image is given its own record), and where each record comprises a data set identification number uniquely identifying the respective image data sets (Hiyama: Figure 2, item 72), a common source identifier that identifies the respective image data set as belonging to a common group (Hiyama: figure 2, item 71), a file type identifier indicating that the respective image data set is a low-energy image data set, a high energy image data set, a soft-tissue image data set, or a bone image data set (Hiyama: Figure 2, items 76 and 77: The region and position codes are used to identify the image. Thus labeling the image as high, low, or a resulting image would be required.), and an image filename indicating the location on a storage device for each respective data set (Hiyama: Figure 2; col. 6, line 66 – col. 7, line 16: The file structure Hiyama discloses for images has to have some kind of means of identification, i.e., a file name. Hiyama does not specifically state that a file name is stored, although this is bordering on inherency a

secondary teaching will be provided to show that media files can be used using file names.).

Cabrera discloses that a file name can be used to identify a media file, that file name is used to indicate the location on a storage device of that media file.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use file names (as taught by Cabrera) in the apparatus disclosed by Takeo (as modified by Hiyama). File names allow for easy location of images in a file structure. Thus by using file names Takeo will be able to better organize the image files.

#### ***Response to Arguments***

7. Applicant's arguments filed 04/10/07 have been fully considered but they are not persuasive.

8. The applicant first argues "Takeo does not address identification of images at all, nor does Takeo even suggest that identification of images is a problem". The examiner would like to appoint the applicant to col. 12 of Takeo, where Takeo discloses memory storage and identification issues. Therefore Takeo is teaching the need to identify images in memory. Thus a data structure is required. As the examiner has stated many times image data structures are all well known. Replacing one with another is obvious.

9. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was

within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

10. In regards to the applicants argument that the IDS are "external and thus do not identify another image data set". The term image data set is not limited only to the image. Data files can be considered part of the "set". Therefore the links taught in Hiyama can be considered part of the image data set.

***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher L. Lavin whose telephone number is 571-272-7392. The examiner can normally be reached on M - F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher Lavin



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